



**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554**

In the Matter of	)	
Public Notice Seeking Comment for Satellite	)	IB Docket No. 18-251
Communications Services For the Communications	)	
Marketplace Report	)	

**COMMENTS OF THE SATELLITE INDUSTRY ASSOCIATION**

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## SUMMARY

The Satellite Industry Association submits these comments in response to the above-referenced Public Notice, which seeks comments and data to assist the Federal Communications Commission's International Bureau's analysis of the state of satellite communications services as required by RAY BAUM's Act of 2018. Satellite services have a significant impact on the U.S. economy, contributing \$52.1B to the U.S. economy, and \$104.5B to the global economy, in 2017. Satellites provide a wide range of services across the entire United States, including satellite TV, radio, and broadband delivery directly to consumers, as well as distribution of video and audio content to broadcast stations, radio stations, and cable headends. Satellites also play a critical role in situations where terrestrial communication infrastructure networks are not available such as natural disasters and electrical outages. A significant area of growth for the satellite industry is broadband delivery to end users, including those on aircraft and ships. This growth is fueled by the satellite industry's investment of tens of billions of dollars in high-throughput geostationary satellites and innovative non-geostationary satellite systems and associated ground infrastructure. Satellites have played an important role in providing Americans with valuable communications services and that role will only increase as communications platforms and the data shared over them increases.



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**I. INTRODUCTION**

The Satellite Industry Association (“SIA”)<sup>1</sup> hereby comments in response to the above-referenced Public Notice, which seeks comments and data to assist the Federal Communications Commission’s International Bureau’s analysis of the state of satellite communications services as required by RAY BAUM’s Act of 2018.<sup>2</sup> SIA is a U.S.-based trade association providing representation of the leading satellite operators, service providers, manufacturers, launch services

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<sup>1</sup> SIA Executive Members include AT&T Services, Inc.; The Boeing Company; EchoStar Corporation; Intelsat S.A.; Iridium Communications Inc.; Kratos Defense & Security Solutions; Ligado Networks; Lockheed Martin Corporation; Maxar Technologies; Northrop Grumman Corporation; OneWeb; SES Americom, Inc.; Space Exploration Technologies Corp.; Spire Global; and ViaSat Inc. SIA Associate Members include ABS US Corp.; Analytical Graphics, Inc.; Artel, LLC; Blue Origin; DataPath, Inc.; Eutelsat America Corp.; ExoAnalytic Solutions; Globecom, Inc.; Glowlink Communications Technology, Inc.; HawkEye 360; Hughes Defense and Intelligence Systems/Government Solutions; Inmarsat, Inc.; Kymeta Corporation; L3 Technologies; Panasonic Avionics Corporation; Planet; SES; Telesat; TrustComm, Inc.; Ultisat, Inc.; and XTAR, LLC. For more information on SIA, see [www.sia.org](http://www.sia.org).

<sup>2</sup> International Bureau Seeks Comment on Satellite Communications Services For the Communications Marketplace Report, Public Notice, DA 18-858 (rel. August 17, 2018) (“Public Notice”).



providers, remote sensing operators, and ground equipment suppliers. SIA is the unified voice of the U.S. satellite industry on policy, regulatory, and legislative issues affecting the satellite business. The satellite communications industry, and satellite broadband in particular, is a rapidly growing industry. As Chairman Pai has noted:

According to Morgan Stanley's analysis, "[t]he largest opportunity comes from providing Internet access to under- and unserved parts of the world." Specifically, Morgan Stanley estimates that satellite broadband will make up 50% of the projected growth in the global space economy between now and 2040. That translates to a revenue opportunity of over \$400 billion a year.<sup>3</sup>

The following comments detail the revenue and growth of satellite TV, radio, and broadband services, and the impact of these services, which provide critical and resilient infrastructure across the U.S. Moreover, the current explosion in innovation in the industry has resulted in broadband access to the entire continental U.S. and will enable ubiquitous connectivity to 5G services to all fixed and mobile consumers into the future.

## **II. SATELLITE SERVICES REVENUE CONTRIBUTED TENS OF BILLIONS OF DOLLARS TO THE U.S. ECONOMY IN 2017**

In response to the Bureau's request for data and statistics for 2016 and 2017 for the satellite industry, SIA attaches as Appendices A and B, relevant excerpts from our State of the Satellite Industry Reports. Satellite services have a significant impact on the U.S. economy, contributing \$52.1B to the U.S. economy, and \$104.5B to the global economy in 2017. Satellite TV made up

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<sup>3</sup> "Remarks of FCC Chairman Ajit Pai at the Satellite Industry Association's 21<sup>st</sup> Annual Leadership Dinner", FCC, 12 March 2018, <https://docs.fcc.gov/public/attachments/DOC-349676A1.pdf>.



93% of the global consumer services revenue, satellite radio 5%, and satellite broadband the remaining 2%. Over 220 million satellite TV subscribers exist across the globe; 39% of all satellite TV revenues are attributed to the United States. Subscribers to satellite TV make up 20% of all pay-tv subscribers globally.<sup>4</sup> Indeed, over the last two decades, satellite pay-tv services providers in the US have injected critical competition into the US pay-tv market benefiting tens of millions of consumers across the US. This includes consumers subscribing directly to satellite pay-tv services as well as other consumers of cable, broadcasting or on-demand video services who benefit thanks to a more competitive and vibrant video distribution market.

Satellite radio exhibited 8% growth in revenue in 2017, with a growth of 6% in number of subscribers, to a total of 32.7 million worldwide. To put this into context, this number is comparable to the number of Apple Music subscribers, and half that of the most popular subscription streaming service, Spotify.<sup>5</sup>

Overall industry broadband revenue grew 4% from 2016 to 2017, and broadband subscribers grew by 5% to approximately two million in the United States; with the launch of new more advanced systems, we anticipate that this growth will continue to increase. Accordingly, as demonstrated by this data, satellite broadband accounts for a growing segment of the satellite industry as a whole and an increasingly competitive part of the U.S. market for broadband

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<sup>4</sup>“Dataxis: Over 1bn pay-TV subs globally”, Advanced Television, 11 January 2018, <https://advanced-television.com/2018/01/11/dataxis-1-073bn-pay-tv-subs-globally/>.

<sup>5</sup>Liptak, Andrew, “Apple Music is set to surpass Spotify in paid US subscribers this summer”, The Verge, 4 February 2018 <https://www.theverge.com/2018/2/4/16971436/apple-music-surpass-spotify-us-subscribers>.



communications services. SIA expects that in the next few years, with the planned launches of EchoStar XXIV and ViaSat-3, and of the anticipated new and growing non-geostationary satellite constellations, the U.S. satellite broadband services market will experience additional growth and U.S. consumers will benefit from the introduction of increasingly ubiquitous, higher speed, higher capacity and lower latency broadband services.

### **III. VIDEO AND AUDIO DISTRIBUTION**

In addition to subscriber-based satellite video and audio services, C-band satellites provide an indispensable role in the distribution of video and audio content to individual broadcast stations and cable headends. The vast majority of the video and audio programming received in U.S. homes travels over a C-band satellite at some point in its distribution chain. C-band satellite networks also supply basic connectivity to Alaskan bush villages, support missile warning and other national defense capabilities, deliver emergency alerts and weather information critical to public safety, and allow restoration of services when the terrestrial network is damaged or unavailable.

Moreover, the distance insensitivity of satellite communications means that rural and remote areas have access to the same content and features as do densely populated cities. For example, a broadcast station in Minnesota can receive the same diverse set of programming as one in downtown Cincinnati, and both operators can participate in trials to bring the next generation of ultra high definition service to their customers.



#### **IV. SATELLITE BROADBAND IS POISED TO CREATE A PARADIGM SHIFT**

Satellite broadband has the capability of connecting America's infrastructure, from its agricultural equipment, to its oil rigs, to its transportation. Today, satellite broadband, for instance, enables remote farms with livestock sensors, soil monitors, and autonomous farming equipment in rural America, far beyond where terrestrial wireless and wireline can reach or make economic sense to deploy. Autonomous farm equipment, already enabled by satellite positioning technology, often needs connectivity far beyond the line of sight of a cell tower. Vice President Pence recognized the growing importance of satellites in his remarks on National Agriculture Day, noting: "In fact, today in America, [what] [sic] we grow and produce here on Earth increasingly depends on the satellites and the technology that we have circling the globe in outer space... I've also seen how American agriculture today uses the technologies of today and tomorrow to increase productivity, maximize crop yields, and prepare for extreme weather events."<sup>6</sup> Similarly, satellite communications allow for the operations of remote oil and gas rigs; Northern Sky Research estimates that these revenues were \$600M in 2010, and would increase to \$975M by 2020.<sup>7</sup>

Satellite will play a critical role in 5G services, by serving functions such as providing consumer services, connecting the Internet of Things, machine-to-machine communications, connecting and

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<sup>6</sup> Pence, Mike, "Remarks by Vice President Pence on National Agriculture Day", *The White House*, 20 March 2018 <https://www.whitehouse.gov/briefings-statements/remarks-vice-president-pence-national-agriculture-day/>

<sup>7</sup> "The Oil And Gas Market for Satellite Services", Satellite Markets & Research Market Briefs, November 2014, <http://www.satellitemarkets.com/pdf2014/oilandgas-marketbrief.pdf>





updating moving platforms, providing backhaul services, multicasting and caching content, in addition to providing global coverage and resilience.<sup>8</sup> Additionally, satellites are playing an increasingly profitable role in the aviation industry. A \$1B market today, the London School of Economics projects that airline broadband will encompass a \$30B market by 2035. Connected aircraft could also save airlines \$15B annually in operating costs, according to the same study.<sup>9</sup>

## **V. SATELLITE OFFERS BROADBAND SERVICE ACROSS THE ENTIRE CONTINENTAL UNITED STATES**

Satellite broadband service currently offered over high-throughput Ku and Ka-band geostationary satellites, such as SES-14, SES-15 as well as SES's O3b Ka-band constellation of satellites operating in medium-earth orbit, offer innovative services for both fixed and mobile operations, greater capacity for video downloads and streaming, and competitive pricing per gigabit to customers in the United States in both competitive markets and those that are under or unserved by terrestrial broadband operators. For example, EchoStar and Viasat currently offer 25/3 Mbps satellite broadband service across the entire continental U.S., Hawaii, Puerto Rico, and portions of Alaska, and in some U.S. locations speeds as fast as 100 Mbps are provided. Chairman Pai recognized the importance of satellite communications in rural America in his remarks to the

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<sup>8</sup>"Satellite Communication Services: An integral part of the 5G Ecosystem", EMEA Satellite Operators Association (ESOA), <https://gscoalition.org/cms-data/position-papers/5G%20White%20Paper.pdf>

<sup>9</sup> Grous, Alexander, "Sky High Economics", London School of Economics, 2017, <http://www.lse.ac.uk/business-and-consultancy/consulting/assets/documents/sky-high-economics-chapter-one.pdf>



Satellite Industry Association, noting, “Next-generation satellites are bringing new competition to the broadband marketplace and new opportunities for rural Americans who have had no access to high-speed Internet access for far too long.”<sup>10</sup> Because satellite systems have inherently wide-area coverage, there are minimal additional costs to build out to rural and remote areas. This is one reason why incentives made to encourage broadband deployment to underserved areas should be technology neutral; satellite broadband services today can reach areas of the country where it is uneconomical for terrestrial services to build.

Satellite broadband is also used by businesses and governments using a range of spectral bands to deliver assured access to fixed and mobile broadband communications. Further, satellites are providing critical backhaul Internet connectivity to local Internet Service Providers and community institutions as well as wireless service providers in remote locations or where networks are unreliable.<sup>11</sup> These services are also accessible to the aeronautical and maritime industry, which rely on satellites to connect both passengers and vehicles to the Internet.

Despite satellite broadband’s ubiquity across the United States, consumers may not be aware of this competitive alternative. The FCC is in a pivotal position to provide the public with

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<sup>10</sup> “Remarks of FCC Chairman Ajit Pai at the Satellite Industry Association’s 21<sup>st</sup> Annual Leadership Dinner”, FCC, 12 March 2018, <https://docs.fcc.gov/public/attachments/DOC-349676A1.pdf>.

<sup>11</sup> “Satellite Backhaul vs. Terrestrial Backhaul: A Cost Comparison”, Gilat, 2015, <https://www.gilat.com/wp-content/uploads/2017/02/Gilat-White-Paper-Cellular-Satellite-Backhaul-vs-Terrestrial-Backhaul-A-Cost-Comparison.pdf>. See also González-Sanfelíu, Carmen, “Demand Grows for Wireless Backhaul Via Satellite”, Intelsat, 2013, <http://www.intelsat.com/wp-content/uploads/2013/11/CANTOCancion2013.pdf>.



knowledge of broadband service options, especially in areas that are unserved or underserved by terrestrial operators, via its Broadband Deployment Report,<sup>12</sup> and encourage competition in the broadband marketplace. As Commissioner O’Rielly noted recently, the Commission’s current Broadband Deployment Report data fails to account for the number of consumers who presently have access to satellite broadband services if they choose to activate them. Instead the report counts only the 24 million Americans without wired broadband.<sup>13</sup> The FCC should include users living in regions covered by 25/3 Mbps satellite broadband service as “served”; in this case, there is a broadband provider available in their region capable of receiving FCC-defined broadband immediately. Ensuring that consumers are aware of all their options and that broadband policies are crafted to reflect these numbers, is a critical step in closing the digital divide. By accurately assessing broadband coverage to include service by all technologies, the Commission can prioritize the deployment of resources to communities that are truly unserved or only served by one provider. Accordingly, the FCC should include satellite broadband in its broadband maps and reports.

## **VI. THE SATELLITE INDUSTRY IS INVESTING IN HIGH CAPACITY SATELLITES AND NEW CONSTELLATIONS**

The satellite industry has invested tens of billions of dollars to innovate and increase connectivity both in the United States and globally, and is continuing to make significant investments. New

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<sup>12</sup>2018 *Broadband Deployment Report*, FCC 18-10 (rel. Feb 2, 2018), <https://docs.fcc.gov/public/attachments/FCC-18-10A1.pdf>.

<sup>13</sup> Remarks of Commissioner Michael O’Rielly, “Smart Regs for Smart Tech: How Government Can Allow Next Gen Internet Networks to Flourish.” (Mackinac Center for Public Policy, June 20, 2018) (emphasis in original) *available at* <https://docs.fcc.gov/public/attachments/DOC-351816A1.pdf>.



satellites are launching every year, and in the last several years began broadly providing users across the United States with a variety of innovative services. This year the industry reached a new milestone, providing up to 100 Mbps download speeds. Spectrum-enabled satellite capabilities are continuously expanding and improving. In the next several years, satellite broadband operators will be delivering fiber-like speeds using geostationary (“GSO”) and non-geostationary (“NGSO”) satellites that are under construction today, with the ability to reach speeds of up to a gigabit per second and simultaneously process a terabit of data per second.<sup>14</sup> Both high throughput geostationary satellites and innovative NGSO satellites will provide orders of magnitude capacity increases and resulting consumer broadband benefits, remaining competitive with terrestrial offerings.

For example, SES has commissioned its SES-17 satellite, which will employ a Digital Transparent Processor that will offer mobility customers operating in North America, South America, Central America, the Caribbean and the Atlantic Ocean extraordinary efficiency and flexibility in bandwidth management.<sup>15</sup>

Intelsat will shortly launch Horizons 3e, the sixth of the company’s fleet of Intelsat Epic<sup>NG</sup> high throughput satellites. Horizons 3e is the first Intelsat Epic<sup>NG</sup> satellite to feature a multiport amplifier that enables power portability across all the satellite’s Ku-band spot beams, allowing power to be adjusted to each beam to meet customer throughput demand. By matching satellite power usage to

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<sup>14</sup> SES opens new era in global connectivity with O3b mPOWER, available at <https://www.ses.com/press-release/ses-opens-new-era-global-connectivity-o3b-mpower>;

<sup>15</sup> “SES and Thales Unveil Next-Generation Capabilities Onboard SES-17”, available at <https://www.ses.com/press-release/ses-and-thales-unveil-next-generation-capabilities-onboard-ses-17>.



traffic demand, Horizons 3e will allow customers to leverage this additional efficiency to expand their services across the Asia Pacific region.

Inmarsat's Global Xpress system has been delivering seamless, high-speed broadband connectivity across the globe since December 2015. The constellation is made up of four Ka-band, high speed mobile broadband communications satellites with a fifth satellite targeted for launch in 2019. Global Xpress delivers broadband satellite solutions to customers on land, in the air, and at sea with a combination of fixed narrow spot beams to deliver high speed services with more compact terminals, plus steerable beams for additional capacity that can be directed in real-time to where it is needed.

Telesat's new Telestar 19 VANTAGE satellite launched in July of this year is part of a new generation of Telesat satellites that combine broad regional beams and powerful high throughput satellite (HTS) spot beams in a design optimized for high bandwidth applications. Built and launched in the United States, and operating from 63 degrees West, the Telstar 19 VANTAGE satellite allows customers to implement high performance broadband networks across the Americas and the Atlantic Ocean.

Hughes is currently in the process of constructing its next generation, Commission-licensed, Ultra-High Density Satellite, EchoStar XXIV, which will provide service throughout the Americas at



speeds of 100 Mbps or more.<sup>16</sup> EchoStar XXIV is being constructed by Space Systems Loral and is expected to be launched and begin commercial service in 2021.

At the same time tens of thousands of new non-geostationary satellites from multiple providers will soon join the existing O3b fleet of non-geostationary satellites to provide low-latency, high-speed broadband across the globe. Over 20,000 Non-Geostationary communications satellites from 13 companies across 21 constellations have been filed with the FCC, promising ubiquitous broadband internet coverage worldwide at low latencies by the mid 2020s.<sup>17,18</sup> SES has already launched 16 NGSO satellites in their O3b constellation,<sup>19</sup> SpaceX has launched two demonstration satellites,<sup>20</sup> Telesat has launched one demonstration satellite,<sup>21</sup> Kepler has launched two

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<sup>16</sup> See Hughes license for HNS 95W space station, call sign S3017, IBFS File Nos. SAT-LOA-20170621-00092 and SAT-AMD-20170908-00128 (granted March 23, 2018), *see also* Press Release, Hughes, Hughes Selects Space Systems Loral to Build Next-Generation Ultra High Density Satellite (Aug. 9, 2017),

<https://www.echostar.com/en/Press/Newsandmedia/Hughes%20Selects%20Space%20Systems%20Loral%20To%20Build%20Next-Generation%20Ultra%20High%20Density%20Satellite.aspx>.

<sup>17</sup> Messier, Doug, "SpaceX Wants to Launch 12,000 Satellites", ParabolicArc, 3 March 2017, <http://www.parabolicarc.com/2017/03/03/spacex-launch-12000-satellites/>

<sup>18</sup> Henry, Caleb, "OneWeb asks FCC to authorize 1,200 more satellites", SpaceNews, 20 March 2018,

<https://spacenews.com/oneweb-asks-fcc-to-authorize-1200-more-satellites/>

<sup>19</sup> "O3b Satellites Now Ready to Provide More Fibre-like Connectivity", SES, 1 June 2018, <https://www.ses.com/press-release/o3b-satellites-now-ready-provide-more-fibre-connectivity>.

<sup>20</sup> Henry, Caleb, "SpaceX launches pair of its demo internet satellites with Spanish radar satellite", SpaceNews, 22 February 2018, <https://spacenews.com/spacex-launches-pair-of-its-demo-internet-satellites-with-spanish-radar-satellite/>.

<sup>21</sup> "Telesat Begins Deploying Its Global Low Earth Orbit (LEO) Constellation With Successful Launch of Phase-1 Satellite", Telesat, 12 January 2018, <https://www.telesat.com/news-events/telesat-begins-deploying-its-global-low-earth-orbit-leo-constellation-successful-launch>.



demonstration satellites,<sup>22</sup> while Oneweb is expected to launch its first 10 satellites at the end of 2018/early 2019.<sup>23</sup>

These technological investments are made without the need for government subsidy, but do require regulatory certainty and technology neutral regulatory policies including for the access to spectrum for success, as the manufacturing to launch process can take years, and an individual satellite can cost up to \$500 million.<sup>24</sup>

## **VII. SATELLITES PROVIDE COMMUNICATIONS RESILIENCE IN THE EVENT OF NATURAL DISASTERS**

Satellites play a critical role when the terrestrial communications infrastructure is unavailable because of a natural disaster, electrical outage or, worse yet, terrorist attack. Unlike their terrestrial counterparts, satellite networks are not susceptible to damage from such disasters because the primary repeaters are onboard the spacecraft and not part of the ground infrastructure. Hand-held terminals, portable Very Small Aperture Terminal (VSAT) antennas, and temporary fixed installations can all be introduced into a post-disaster environment to provide support to relief efforts and enhance recovery efforts.

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<sup>22</sup> Henry, Caleb, "Kepler Communications opens launch bids for Gen-1 LEO constellation", SpaceNews, 29 August 2018.

<https://spacenews.com/kepler-communications-opens-launch-bids-for-gen-1-leo-constellation/>

<sup>23</sup> Henry, Caleb, "OneWeb, Arianespace target December-February for first Soyuz launch", SpaceNews, 27 August 2018, <https://spacenews.com/oneweb-arianespace-target-december-february-for-first-soyuz-launch/>.

<sup>24</sup> Revillon, Pacome, "FUNDAMENTALS AND DYNAMICS OF THE SATELLITE COMMUNICATIONS BUSINESS", Euroconsult, 2016, <http://www.inmarsat.com/wp-content/uploads/2016/10/EC-Inmarsat-Capital-Markets-Day-2016.pdf>.



Emergency preparedness networks are increasingly including satellite networks as part of their system design in order to ensure sufficient resiliency and cost-effectiveness. Public Safety Answering Points (PSAPs) have begun incorporating satellite back-up into their next generation 911 systems to cost-effectively mitigate potential network outage risks caused by any ground-based or environmental disruptions. And the First Responder Network Authority (FirstNet) is including satellite communications in order to meet the geographic coverage needs of its nationwide public safety broadband network.<sup>25</sup>

Vice President Pence has recognized the importance of satellites in providing connectivity in the aftermath of recent natural disasters, noting “we’ve witnessed the power of commercial satellites to reconnect isolated communities in the wake of natural disasters”.<sup>26</sup> In 2017 in Puerto Rico and the Virgin Islands, 95% and 77% of all cell sites, respectively, were wiped out by Hurricanes Irma and Maria this fall. Chairman Pai noted the key role of satellites in disaster response in his remarks to the Satellite Industry Association, noting, “with cell networks in Puerto Rico and the U.S. Virgin Islands essentially knocked out, satellite phones were a lifeline for FEMA and other first responders

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<sup>25</sup> "Inmarsat Government selected by AT&T as a core member for its U.S. FirstNet Network", 31 March 2017, <https://www.inmarsat.com/press-release/inmarsat-government-selected-att-core-team-member-u-s-firstnet-network/>

<sup>26</sup> Pence, Mike, “Remarks by Vice President Pence at Second Meeting of the National Space Council”, *The White House*, 22 February 2018, <https://www.whitehouse.gov/briefings-statements/remarks-vice-president-pence-second-meeting-national-space-council/>





as well as numerous residents.”<sup>27</sup> Chairman Pai pointed to the specific case of a lengthy queue that formed at Derkes Pharmacy, in Guayama Puerto Rico, a town of 45,000 people an hour’s drive from San Juan following Hurricane Maria. The wait was not for medicine, but for access to the town’s only working phone — a satellite phone. It allowed for communication to the outside world while 1,500 of the 1,600 cell towers on the island were destroyed.<sup>28</sup> Puerto Rican organizations have noted the criticality of these services, and their reliability in comparison to terrestrial offerings, in comments on the *The Uniendo a Puerto Rico Fund and the Connect USVI Fund, et al. Order and Notice of Proposed Rulemaking*, FCC 18-57 (2018) (“PR/USVI Fund NPRM”).<sup>29</sup> SIA members provided FEMA, Customs and Border Patrol, and the FBI with VOIP and internet services, worked directly with public safety officials and NGOs to provide emergency communications, donated and delivered satellite phones and rapidly deployable Broadband Global Area Network terminals to affected areas, established new VSAT networks, provided communications services to keep banks

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<sup>27</sup> Pai, Ajit, “Remarks of FCC Chairman Ajit Pai at the Satellite Industry Association’s 21<sup>st</sup> Annual Leadership Dinner”, FCC, 12 March 2018, <https://docs.fcc.gov/public/attachments/DOC-349676A1.pdf>.

<sup>28</sup> Burnett, John, “‘We’re Alive’: Guayama Residents Reach Family On Town’s One Working Phone”, National Public Radio, 29 September 2017, <https://www.npr.org/2017/09/29/554557884/-we-re-alive-guayama-residents-reach-family-on-town-s-one-working-phone>.

<sup>29</sup> Comments of Liga de Cooperativas de Puerto Rico, WC 18-143 et. al., Jul. 2, 2018 (“Satellite broadband was the only reliable communications system [sic] in the aftermath of the hurricanes and must be fully implemented across the island to build a truly resilient and connected Puerto Rico.”; “Advances in technology now offer nextgeneration satellite system [sic] that can provide Puerto Rico with the latest technology and ever-increasing broadband speeds.”); See also Comments of the Puerto Rico Manufacturers Association, WC 18-143 (Jul. 3, 2018); see also Casa Pueblo, WC 18-143 et. al (Jul. 5, 2018).



and pharmacies open and to help bring wireless networks online, and deployed personnel on the ground to aid in communications access.<sup>30</sup>

## **VIII. ADEQUATE ACCESS TO SPECTRUM IS NEEDED FOR CONTINUED INVESTMENT IN SATELLITE TECHNOLOGY**

Successful and innovative communications services result from multiple technologies and all need long-term access to spectrum, as noted by Secretary of Commerce Wilbur Ross in his speech before the National Telecommunications Information Administration Spectrum Policy Symposium, where he emphasized that “spectrum policy will play an important role in our efforts to advance space commerce”.<sup>31</sup> In some cases, this may require exclusive spectrum allocations, and in other cases, when technically demonstrated, can include shared spectrum.

As the Federal Communications Commission seeks to identify additional bands for terrestrial 5G it must carefully consider how to both protect incumbent satellite operations and provide additional spectrum that is available to support their growth. Because of the global nature of satellites, it is equally important that spectrum for satellites be made available on a globally harmonized basis.

The satellite industry has been successfully sharing spectrum through technical rules and coordination of individual systems for decades. The FCC and the International Telecommunication Union (“ITU”) rules require close spacing of geostationary orbit satellites to permit frequency reuse

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<sup>30</sup> SIA Comments, PS Docket No. 17-344, Jan. 22, 2018.

<sup>31</sup> Ross, Wilbur, “Remarks by Secretary Wilbur L. Ross at the NTIA Spectrum Policy Symposium”, Department of Commerce, 12 June 2018, <https://www.commerce.gov/news/secretary-speeches/2018/06/remarks-secretary-wilbur-l-ross-ntia-spectrum-policy-symposium>.



at multiple orbital locations, so the satellite industry has been an industry leader in spectrum use and reuse. The satellite industry has also worked with regulators and others industry spectrum users to study how earth stations can operate with minimal impact in bands where spectrum is shared with other services.

In order to ensure Americans across the country continue to have access to reliable and valuable video and audio content, the Commission must ensure that any decision to introduce expanded terrestrial service in the 3700-4200 MHz C-band spectrum include adequate access and protections for existing and future C-band satellite service users. Additionally, for the United States to ensure its continued global leadership in next generation satellite broadband and to meet our national security communication needs, it is critical that the FCC support the use of the spectrum in the bands above 24 GHz in a way that will support the next generation satellite systems that are being built. This means there must be both dedicated spectrum for ubiquitous FSS user terminals and shared spectrum for other uses. The FCC recognized this requirement in its Spectrum Frontiers proceeding and failure to advocate for dedicated satellite spectrum on the international stage will have serious negative consequences for the industry. The FCC must continue to ensure satellite can advance their spectrum needs by providing leadership at the upcoming World Radio Conference that recognizes the global dimensions of satellite spectrum requirements.



## IX. CONCLUSION

Satellite has played an important role in connecting Americans to valuable communications and that role will only increase as communications mechanisms and the data shared over them increases. As the Commission considers further policies regarding communications services, the FCC must support policies that promote U.S. leadership in the satellite industry, enabling the satellite industry to provide to U.S. consumers resilient, advanced communications no matter where they live.

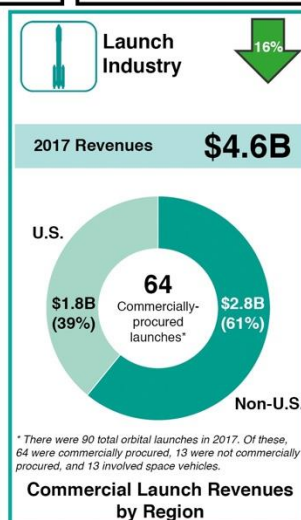
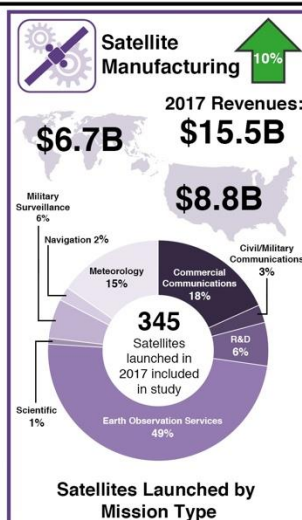
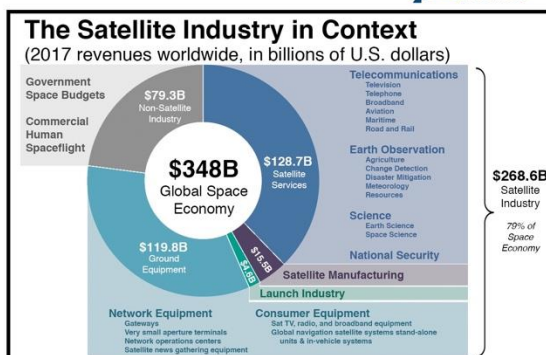
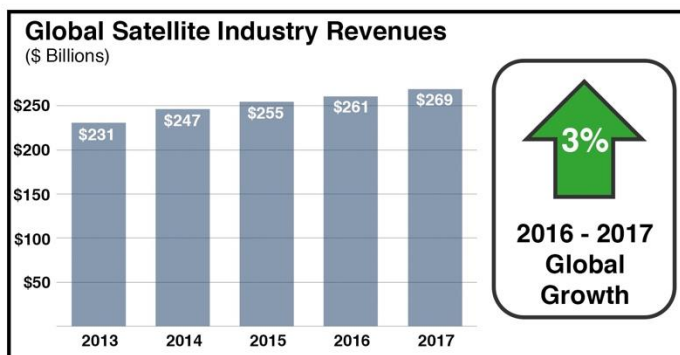
Respectfully submitted,

/s/

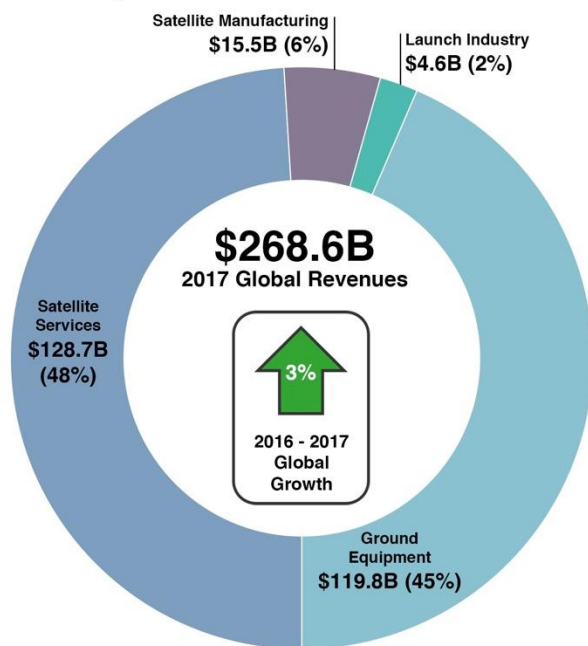
SATELLITE INDUSTRY ASSOCIATION  
Tom Stroup, President  
1200 18th St., N.W., Suite 1001  
Washington, D.C. 20036

## Appendix A: SIA State of the Satellite Industry Report Summary

# 2018 State of the Satellite Industry



## 2018 Top-Level Global Satellite Industry Findings



For more information on the satellite industry, or for previous SSIR reports, contact SIA:

### Satellite Industry Association

info@sia.org  
202-503-1560  
www.sia.org

Bryce Space and Technology  
brycetechnology.com



**Satellite services**, the largest segment; 1% growth. Consumer services continue to dominate the overall satellite industry



**Satellite manufacturing** revenues increased by 10%. More satellites launched in 2017



**Launch industry** revenues declined by 16%. Number of launches consistent with previous year. More launches using less expensive launch vehicle types



**Ground equipment** revenues grew by 5.6%. Growth in GNSS and network equipment, consumer equipment remaining flat

Produced by Bryce Space and Technology (formerly Tauri Group Space and Technology)



## Appendix B: SIA State of the Satellite Industry Report, US Satellite Services Revenue

